

Application No. 10/694,630
Response to Office Action dated August 10, 2006
Paper dated January 24, 2007
Attorney Docket No. 5327-031639

**Response Under 37 CFR § 1.116
Expedited Procedure
Examining Group 3600**

REMARKS

This Amendment further amends claim 1 and cancels claims 12 and 13. Claims 1, 3, 4 and 9 remain in the case. Claim 1 contains the subject matter of claims 12 and 13 and support for this matter is found in paragraph [0040] on page 8 of the specification. Claim 1, as amended, also recites a characterization for the width of the second beam. Support for this new recitation is found in Figure 4b of the application. Applicants respectfully request consideration of the rejection of the claims.

Rejections Under 35 U.S.C. § 103(a)

Claims 1, 3 and 9 stand rejected under 35 U.S.C. § 103(a) as being obvious over Jarl in view of Driggers and further in view of Ringer. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being obvious over Jarl, Driggers and Ringer as applied to claim 1 and further in view of Japanese Application No. 11-246193. Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being obvious over Jarl, Driggers and Ringer, and further in view of Ouelette.

As set forth above, Applicants have canceled claims 12 and 13 and have added these limitations to amended claim 1. Applicants have also further amended claim 1 to recite that the second beam has a width that is substantially equal to the space between the two spaced apart first beams and substantially equal to the first beams. Claim 1 particularly is directed to the conveyor structure shown in Figures 4a and 4b.

Claim 1 is directed to a battery changing system which easily, efficiently and safely removes and replaces and substantially supports a battery block of an industrial truck in the process. The changing system comprises a roller conveyor external to the industrial truck, with at least a portion of the conveyor capable of being raised and lowered. The external roller

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conveyor is configured to be placed underneath a battery compartment that holds a battery block. A floor surface of the battery compartment is provided with at least one opening to receive at least one roller of the roller conveyor. The battery block is movable all the way out of the battery compartment in a lateral direction by means of the roller conveyor. The roller conveyor includes a first segment and at least one movable second segment. The first segment comprises a pair of spaced first beams, each having a plurality of rollers. The second segment comprises a second beam located between the first beams and having a plurality of rollers. The second beam is longitudinally extendable and retractable with respect to the first beams. A stop is located on the first segment to limit movement of the battery block. A retaining device is located on the second beam and is configured to engage the truck to prevent relative movement between the roller conveyor and the truck during movement of the battery block.

New amendments to claim 1 include that the second beam has a width that is substantially equal to the width of the space between the first beams and the width of the first beams, that a drive device moves the battery block, and that the drive device includes a drive for one or more of the rollers of the roller conveyor.

Jarl is directed to a method of removing a battery from an industrial truck. A trolley 12 has a load-carrying device 13 with rollers 16. The rollers 16 can be inserted through apertures 11 in bottom plate 8 of an industrial truck 1 to lift and remove a battery 7. While Jarl does not teach or suggest the two-segment construction of claim 1, the Examiner relies upon Driggers for this disclosure.

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Driggers discloses an apparatus 1 for removing hearth inserts from a fireplace. The apparatus 1 has a pair of rear rails 3 and 5 with rollers 11. Front rails 13 and 15 are telescopically mounted between the rear rails 3 and 5 and can be locked in a desired position by locking means 19 and 21. Support means 39 and 41 are attached to one end 7 of the apparatus 1 and are adjustable in height by wing nuts 43 and 45. Support means 29 and 31 for resting upon an elevated surface are located at the other end of the apparatus. In operation, the apparatus 1 is positioned next to the hearth insert 35 and the height of the adjustable support means 39 and 41 adjusted accordingly. The lower surface of the hearth insert 35 is then elevated, such as by use of a crowbar, and front rails 13 and 15 inserted there under. The hearth insert 35 is then rolled out on the apparatus 1.

With regard to Driggers, Applicants direct the Examiner's attention to column 3, line 49 to column 4, line 2, which disclose that the front rails 13 and 15 and conveying means 25 thereon are substantially thinner than rear rails 3 and 5 and the conveying means 11 mounted thereon. Since front rails 13 and 15 rest upon the hearth surface while rear rails 3 and 5 are suspended between support means 29 and 31 and adjustable vertical support means 39 and 41, it is necessary that the rear rails 3 and 5 have strength sufficient to support a load over the span represented by the distance between the proximal end 7 and distal end 9 of the rear rails. The thinness of front rails 13 and 15 is required so that the front rails 13 and 15 and front conveying means 25 can be extended into the limited space available beneath the hearth insert 35.

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Conversely to the construction of Driggers, is the construction of the claimed invention, which recites that the second beam 5b has a width that is substantially equal to the width of the space between the spaced apart first beams 5a and to the width of the first beams 5a (Figure 4b). In the arrangement of the claimed invention, the second beam 5b has a substantial surface area and strength so that it can adequately support the battery block while removing and replacing it relative to the battery compartment of the industrial truck. As taught in paragraph [0035] of the specification: “To change the battery, the second segment 5b is pulled out of the first segment 5a and placed underneath the battery compartment 2. By raising and lowering the roller conveyor 5, the battery block 1 can be removed from the battery compartment 2 or inserted into the battery compartment 2.” In the claimed invention, the second segment 5b is capable of being longitudinally extended so that it can be inserted beneath the battery block in the battery compartment and then longitudinally retracted out of the battery compartment and between first beams 5a for removal of the battery block from the battery compartment. Replacement of the battery block is accomplished via a reversed operation. The second segment 5b of the invention to have a substantial surface area so that it can adequately support the battery block during operation of the roller conveyor 5 including the operations of extending and retracting the middle segment 5b into and out of the battery compartment.

Another feature of the claimed invention of claim 1, as amended, is the drive device that can be used to move the battery block onto the roller conveyor 5. As disclosed in paragraph [0040], this drive device may be a threaded spindle or a hydraulic cylinder. This feature aids in positioning the battery block onto the second beam 5b for at least easy removal of the battery block out of the battery compartment 2.

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A further feature of the claimed invention of claim 1, as amended, is that the one or more rollers of the roller conveyor can be driven. The driven rollers help in conveying the battery block into and out of the battery compartment and/or away from or toward the battery compartment, depending on which rollers are driven.

All of the features of the claimed invention, particularly that of Amended claim 1, work together in a synergistic manner to provide a battery block removal and replacement arrangement wherein the battery block is adequately supported upon its removal into and out of the battery compartment and safely and efficiently removed and replaced relative to the battery compartment of an industrial truck. The operations for doing this can be done automatically without little or no human intervention, especially for guiding the battery block onto the roller conveyor as is mandatory in the Driggers reference, which teaches that the hearth insert 35 is lifted by a crowbar and then implies that the hearth insert 35 is manually positioned onto the roller conveyor which supports the hearth insert while the hearth cavity is being worked on.

Jarl discloses a roller conveyor of which a portion can be raised or lowered and configured to be placed under a battery compartment of a forklift. Driggers shows an extendable conveyor system with front and rear rails with rollers wherein the front rails need to be thinner than the rear rails so that the front rails can be extended into the limited space available beneath the fireplace insert which is manually lifted by a crowbar and positioned onto the front rails so that the hearth insert can be removed for purposes of maintaining the hearth cavity. Upper ends 47 and 49 become backstops for preventing the hearth insert from rolling off the end 7. Ringer shows a freight transportation system where Figure 3 shows mobile platform sections 16a and 17a located alongside flatcar 21a. Jacks 56, 57 on platforms 16a and 17a mate with plugs 58, 59

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on the flatcar to retain the flatcar 21a in position. As column 5, lines 48-54 disclose: "Mating connectors 56, 57 (jacks) on the platforms and 58, 59 (plugs) on the flatcar enable the conveyor drives aboard the latter to be selectively energized, under the control of the computer, when one or the other platform section has moved close to the flatcar preparatorily to a container transfer."

Ouellette simply shows a roller conveyor 20 with driven rollers 40.

None of these references when considered alone or in combination teaches or suggests the claimed invention, particularly that of amended claim 1, which recites a system for adequately supporting a battery block and then safely and efficiently removing and replacing this battery block from the battery compartment of an industrial truck. As mentioned hereinabove, these several operations can be done automatically with little or no human intervention.

Claims 3, 4 and 9 depend from, and add further limitations to claim 1. Since these claims depend from a claim believed to be in condition for allowance, these claims are also believed to be in condition for allowance.

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Conclusion

In view of the above amendments and remarks, reconsideration of the rejections of claims 1, 3, 4 and 9, and allowance of claims 1, 3, 4 and 9 are respectfully requested.

Respectfully submitted,

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